

ABSTRACT OF THE DISCLOSURE

An HBT having an InP collector, a GaAsSb base and an InP emitter in which the base is constructed using a thin layer of GaAsSb. The thin base layer can be constructed of a GaAsSb material with a composition having a bulk lattice constant that matches the bulk lattice constant of the material of the collector. The thickness of the GaAsSb base layer is less than 49 nm, and preferably less than about 20 nm. Alternatively, the thin base layer is of a GaAsSb composition that includes a higher As content, resulting in a low conduction band energy discontinuity at the emitter-base junction. Such a GaAsSb base layer has a lattice constant that conforms to the lattice constant of the collector because it is thinly grown so as to be pseudomorphically "strained" over the collector. A high base doping level is used to reduce the sheet resistivity and lower the base series resistance that results from the thinly grown base layer.